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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,898	09/11/2003	Andrew J. Kuzma	42.P13639D	4189

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EXAMINER

DOLAN, JENNIFER M

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/659,898

Applicant(s)

KUZMA, ANDREW J.

Examiner

Jennifer M. Dolan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8, 19-22 and 27-29 is/are pending in the application.
- 4a) Of the above claim(s) 19-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 27-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/10/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Species 1 - claims 1-8, in the reply filed on 3/21/05 is acknowledged. The traversal is on the grounds that species 1 and species 3 should not be separated, since both are drawn to a substantially similar method for re-directing a light beam emitted from a semiconductor device. The examiner agrees with the arguments of the applicant, and is hereby considering claims 27-29 to read on species 1, and thus be elected along with species 1 (claims 1-8).

Regarding the restriction between species 1 and 2, the applicant offers no arguments as to the validity of the restriction. Since species 1 relates to a method for re-directing a light beam, and species 2 is directed toward a method for forming a test structure, the examiner maintains that these species are directed toward patentably distinct inventions.

The requirement is still deemed proper and is therefore made FINAL.

Claims 19-22 have been withdrawn from consideration as being directed to a non-elected invention.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

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international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-6 and 27-29 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S.

Patent No. 6,668,000 to Choa.

Regarding claims 1 and 27, Choa discloses a method comprising: optically coupling (figures 4 and 5) a test structure (340) to a device (light emitting devices; figures 4 and 5) on a wafer (380), the test structure included on the wafer (figures 4 and 5), the test structure comprising a first region (cladding material directly outside of trench 340), a second region (air region inside trench 340), and an interface between the two (figures 4 and 5), the second region comprising a material different from a material of the first region (see column 4, line 50 – column 5, line 15), wherein the test structure is optically coupled to the device in a manner to allow the interface to direct a light beam emitted from the device in a direction different from an original direction of the emitted light beam (figures 4 and 5; column 4, lines 45-55); and detecting and evaluating the light beam (column 4, lines 9-55).

Regarding claim 2, Choa discloses optically coupling the test structure to a side-emitting laser (column 4, lines 44-55).

Regarding claims 3 and 28, Choa discloses reflecting the beam from the interface between the first and second regions, where the regions are comprised of materials having different refractive indexes (figures 4 and 5; column 4, line 60 – column 5, line 15; trenches 340 are etched, and have an index of 1).

Regarding claim 4, Choa discloses coupling the test structure to a back facet of the device (for a simple fabry-perot laser, facets 320 and 330 are identical, and the laser emits in both directions; hence, either can be considered to be the “rear” facet of the device).

Regarding claims 5, 6, and 29, Choa discloses positioning a light detector to receive the beam emitted from the device, and detecting a frequency and intensity of the beam (column 4, lines 9-20; L/I testing corresponds with intensity, and “wavelength” or “mode” testing with frequency; also, it is implicit that the detector must be positioned to receive the beam in order to make these measurements).

4. Claims 1-3, 5, 7, 8, 27, and 28, are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,631,005 to Komazaki et al.

Regarding claims 1 and 27, Komazaki discloses optically coupling a test structure (grating 1c) to a device (10) on a wafer, the test structure comprising a first region (semiconductor region 50; see figure 2), a second region (air portion around grating; see figure 2; alternately, air portion of slant interface 48 in figure 5); and an interface between the two (figures 2, 5), wherein the test structure is optically coupled to the device in a manner to allow the interface to direct a light beam emitted from the device in a direction different from an original direction of the emitted beam (figures 2 and 3); and detecting and evaluating the directed beam (column 8, lines 30-45).

Regarding claim 2, Komazaki discloses that the laser is a side-emitting laser (see figure 2).

Regarding claims 3 and 28, Komazaki discloses reflecting the beam from the interface, where the first and second regions are comprised of materials having different refractive indexes (AlGaAs and air have different refractive indexes; see figure 2).

Regarding claim 5, Komazaki discloses that the detector (3) is positioned to receive the light emitted from the surface (figure 3).

Regarding claim 7, Komazaki discloses that the detector is a PIN photodetector (column 7, line 65 – column 8, line 3; figures 2 and 3).

Regarding claim 8, Komazaki discloses that the detector is integrated into the test structure and light emitting device structure (figures 2 and 3; the detector (3), light emitter (1), and test structure (1c) are integrated on a single substrate (1a)).

5. Claims 1-3, 5, 7, 8, and 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,694,048 to Boudreau et al. (cited by applicant).

Regarding claims 1, 2, 3, 27, and 28, Boudreau discloses optically coupling a test structure (figure 1a; V-groove 105) to an edge-emitting laser (102,202), the test structure comprising a first region (submount material 101 under v-groove), a second region (“air” v-groove 105), and an interface between the two (figure 1a), wherein the two materials have different refractive indexes (air and silicon submount have different refractive indexes), wherein the test structure is optically coupled to the device in a manner to direct a light beam in a direction different from the original direction of the emitted light beam (column 2, lines 15-57); and detecting and evaluating the light beam directed from the interface (column 1, lines 10-45).

Regarding claim 5, Boudreau discloses positioning the detector to receive light emitted from the device (column 2, lines 25-35).

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Regarding claims 7, 8, and 29, Boudreau discloses that the detector is a PIN detector (column 2, lines 54-57), is integrated into the test structure and device structure (figures 1a, 1b, and 2), and is used to detect intensity of the emitted light (column 1, lines 15-35).

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. U.S. Patent No. 6,459,716 to Lo et al. discloses an etched groove used to redirect a laser beam through the substrate and into an integrated detector.
- b. U.S. Patent No. 6,487,224 to Ohashi et al. and U.S. Patent No. 6,449,296 to Hamasaki et al. disclose a submount with an integral photodetector for re-directing a laser beam of an edge-emitting laser to form a surface emitting structure.
- c. U.S. Patent No. 4,971,927 to Leas and U.S. Patent No. 5,912,872 to Feldman et al. disclose means for re-directing the beam of an edge-emitting laser.
- d. U.S. Patent No. 4,653,058 to Akiba et al. discloses a photodetector integrated with the back facet of an edge-emitting laser.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Dolan whose telephone number is (571) 272-1690.

The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

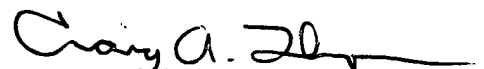
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer M. Dolan  
Examiner  
Art Unit 2813

jmd

  
**CRAIG A. THOMPSON**  
**PRIMARY EXAMINER**